

Chapter 4. Developing Relationships and Collaborative Problem Solving

Contrails: An Introduction

The Air Force operates many aircraft and space systems that are constantly interacting with the environment. Atmospheric interactions from aircraft engines, chaff, and flares can produce a variety of condensation patterns (or contrails), exhaust plumes, vapor trails, or smoke patterns.

The exhaust emissions produced by aircraft and space launch vehicles can produce contrails, which look very similar to clouds, that can last for as little as a few seconds or as long as several hours. Vapor trails are formed only under certain atmospheric conditions and create a visible atmospheric wake similar to a boat propeller in water and usually dissipate very rapidly. Flares produce unique smoke patterns that are visibly different than a contrail but have the same color and appearance as a cloud and typically dissipate very quickly.



DEVELOPING RELATIONSHIPS

Success and failure in diplomacy, in business, and in our daily lives are the result of interpersonal knowledge and personal relationships. Conflict resolution, like diplomacy, is based on understanding the other side's concerns, priorities, and cultural environment. Building relationships also breeds trust, and with trust, opportunity for collaboration and mutually satisfying mission support.

The National Park Service and the Air Force have built relationships through participation in regional Airspace and Range Council meetings. Both agencies have benefited from the increased collaboration over the last decade. The National Park Service has also hosted backcountry trips in Sequoia and Kings Canyon National Parks for the purpose of developing relationships between senior military officers and park managers in a setting that provides the opportunity for solitude, tranquility, and the ability to hear natural sounds. The relationships that have developed have resulted in collaborative problem solving and enhanced cooperation. The

Air Force and National Park Service highly encourage contact, via meetings and trips, between installation commanders and park superintendents in order to learn the values and missions of each agency.

This chapter shares the lessons we have learned through a variety of success stories and provides a guide to cultivating new contacts.

COLLABORATIVE PROBLEM SOLVING: HOW TO RESOLVE AIR FORCE AND NATIONAL PARK SERVICE ISSUES

The following examples highlight the most common Air Force and National Park Service issues and the appropriate office to call for each. If you still cannot determine which office to call, you are encouraged to call the public affairs office at an installation or the main line at a park for further direction.

If you don't know which installation or park to call, you should be able to find the information in the pages for your own base or park in chapter 5.

■ Overflight Issues

For the purposes of this sourcebook the term *overflight issues* encompasses all issues relating to USAF aircraft operations over a national park.

Some common examples are

- Noise from aircraft
- Low-flying aircraft
- Unauthorized flight (e.g., a flight that is not in compliance with USAF/DOD regulations governing that particular airspace)

Contacting the Air Force. Each USAF installation has airspace managers who can be contacted directly for all overflight issues. For every USAF installation featured in chapter 5, you will find a map of the area with its routes and the corresponding airspace manager. USAF MTRs are not always run by the closest USAF installation and could be run by an installation a thou-

BMGR and Sonoran Pronghorn Antelope

The Barry M. Goldwater Range in Arizona is home to the last 100 or so Sonoran pronghorn antelope in the United States. The Department of Defense flies over 40,000 sorties there each year. Seven different target areas have been identified and are surveyed daily prior to any flights. If any antelope are present, no strafing or dropping of ordnance is conducted on the affected target that day.

sand miles away, so identification of the route is important.

General Airspace Issues. When addressing a military overflight issue, the airspace manager should be contacted as soon as possible because radar coverage data is maintained a maximum of 15 days.

When you call the airspace manager you should provide the following basic information:

- Your name
- Your location
- Time of the incident
- Description of the incident
- Location of the incident
- Impacts to park resources and/or visitors (be specific)

While not required, any of the following pieces of information will help expedite the research:

- Type of aircraft (See the Air Force Identification Chart on pages 33-34 for help.)
- Color of aircraft (May help identify if it belongs to the Air Force, Navy, etc.)
- Detailed location (Consult the appropriate map for route names.)
- Estimated altitude
- Frequency of event (first time or every day?)
- Information about normal flight patterns (For example, planes normally fly further east/higher.)

The Air Force has made aircraft noise a priority and routinely charts and, if possible, avoids noise-sensitive areas.

Special Event Scheduling. In some instances USAF schedules can be altered to make short-term allowances for NPS special events. The airspace manager at an installation handles the scheduling and will try to accommodate such requests.

Contacting the National Park Service. When you are conducting long-range planning for a USAF exercise that will require heavy use of airspace

over a park, the park superintendent can help you avoid conflicts by providing information about specific park resources, values, and activities. The manager of the NPS Soundscapes Program Center and/or the regional overflights official can also be contacted regarding park-specific information about soundscapes and overflight issues.

■ Environmental Issues

Contacting the Air Force. Each USAF installation has a civil engineering (CE) office that handles local environmental issues. You should contact the CE chief directly on matters concerning conservation, cleanup, pollution prevention, and NEPA compliance. The direct line for each CE office can be found on the individual base pages in chapter 5. The CE office is also the contact if anything is found in the park that may have fallen from an aircraft.

Contacting the National Park Service. Many federally listed threatened and endangered species are found on USAF installations and ranges. In some cases, the ranges are the only large, undeveloped areas remaining in growing urban areas and provide a last refuge for the animals. In such cases, the Air Force operates under decisions resulting from Endangered Species Act consultations, mainly associated with aircraft noise and munitions use. The key to addressing endangered species issues on an installation is good communication. The superintendent at each park is an invaluable resource for the Air Force in that effort.

■ Other Issues

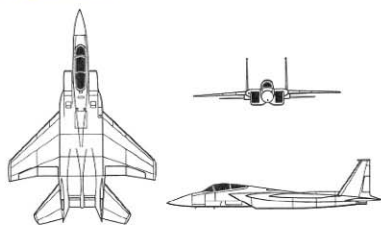
Contacting the Air Force. The public affairs (PA) office at each installation is available to help with education and outreach requests. The PA office handles all community affairs, local news, and requests for speakers or aerial events.

Contacting the National Park Service. The larger parks have public affairs offices that handle similar requests. At smaller parks, such requests are handled through the superintendent's office.

Aircraft Identification Chart

This list shows the standard body types of various USAF aircraft. Please see the "Photos" section of the Air Force website for additional aircraft and variations. www.af.mil

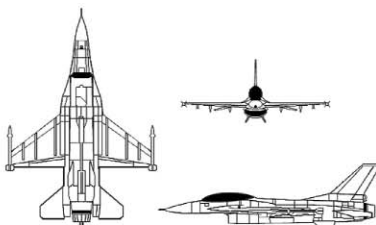
Fighters



F-15 Eagle

ID: Small fighter with two vertical stabilizers on the tail.

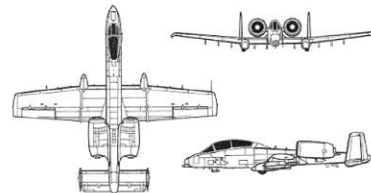
Summary: An unprecedented combination of maneuverability, acceleration, range, weapons and avionics make this a force for air-to-air combat.



F-16 Fighting Falcon

ID: Small fighter with a single stabilizer and a large air intake under the nose.

Summary: A compact, multi-role fighter that has proven itself in air-to-surface attack.

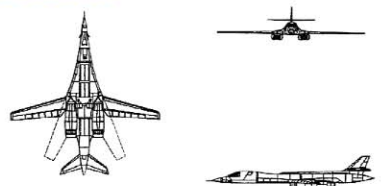


A-10 Thunderbolt

ID: A slower fighter with two external engines on the tail.

Summary: This simple and effective twin engine jet aircraft is designed for close air support of ground forces.

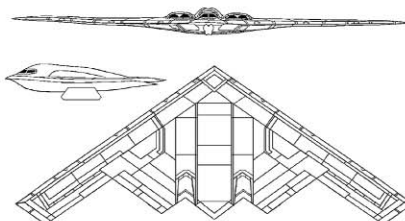
Bombers



B-1 Lancer

ID: Variable wing settings; Forward for takeoff, landing and cruising/ Aft for high speed and maneuverability.

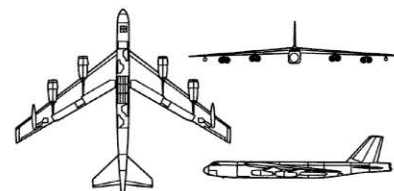
Summary: Provides massive and rapid delivery of precision weapons anywhere around the globe on short notice.



B-2 Spirit

ID: The well-known "Stealth" bomber is unique in appearance.

Summary: A multi-role bomber capable of delivering both conventional and nuclear munitions through previously impenetrable defenses through low-observable or "stealth" characteristics.



B-52 Stratofortress

ID: Four engines on the wings that span almost 160 feet.

Summary: For more than 40 years the B-52 has been the backbone of the manned strategic bomber force and is capable of dropping or launching the widest array of weapons in the U.S. inventory.

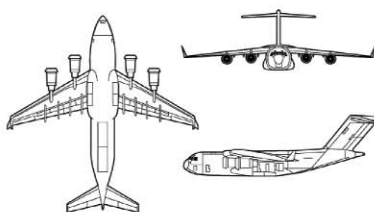
Transports/ Cargo



C-5 Galaxy

ID: The largest aircraft flown by the AF has a wingspan of 223 feet.

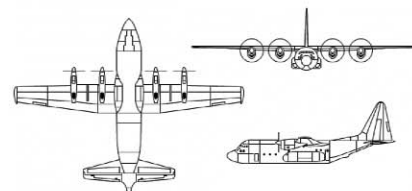
Summary: The tremendous payload capacity of this transport is used for missions in both war and peacetime.



C-17 Globemaster

ID: Wide body with two large engines on each wing.

Summary: This flexible cargo aircraft is capable of rapid and strategic delivery of troops and cargo as well as tactical airlift and airdrop missions



C-130 Hercules

ID: Two large propellers on each wing

Summary: Capable of operating from rough strips, the C-130 is the primary transport for parachuting troops and equipment in hostile areas.

aircraft not drawn to scale

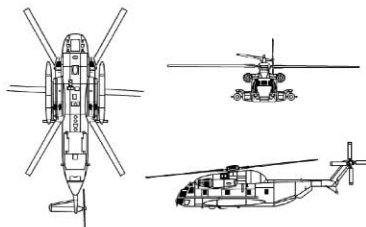
Helicopters



UH-1 Huey

ID: Larger cargo doors with twin cabin windows on each side.

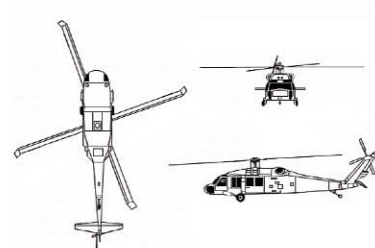
Summary: The most widely-used military helicopter, the Huey is a light-lift utility helicopter used to support Air Force Space Command missile wings and groups



MH-53 Pave Low

ID: The largest and most powerful helicopter in the Air Force inventory.

Summary: Used for low-level, long range infiltration, exfiltration and resupply of special operations, day or night, in adverse conditions.

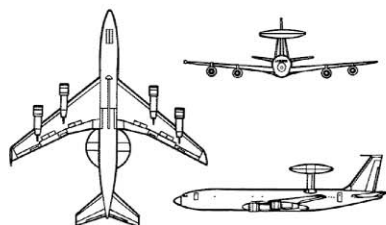


HH-60 Pave Hawk

ID: A highly modified version of the Army Black Hawk

Summary: Primarily used for combat search and rescue. Also capable of performing infiltration, exfiltration and resupply of special operations forces.

Reconnaissance



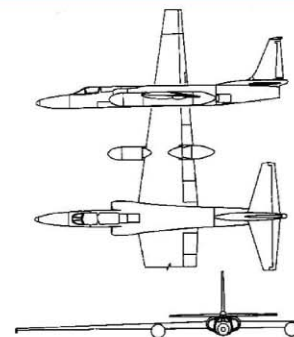
E-3 Sentry

ID: Large, rotating radar dome also known as AWACS (Airborne Warning and Control System)

Summary: A modified Boeing 707 with a radar subsystem that permits surveillance for up to 200 miles.



U.S. AIR FORCE

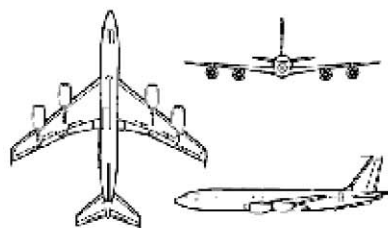


U-2 Dragon Lady

ID: Extremely long wings that give the U2 glider-like characteristics.

Summary: An extremely reliable reconnaissance aircraft with high altitude capability.

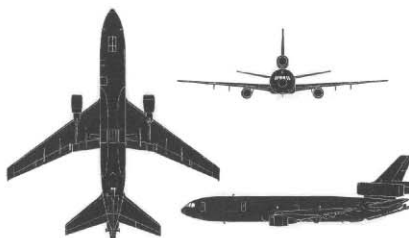
Tankers



KC-135 Stratotanker

ID: Large swept-wing design similar to a Boeing 707.

Summary: The primary mission of this tanker is the air-refueling of strategic long-range bombers.

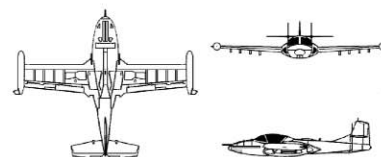


KC-10 Extender

ID: Similar in design to the commercial DC-10.

Summary: Although its primary mission is air-refueling, the KC-10 can combine the tasks of tanker and cargo aircraft.

Trainers:



T-37 Tweet

ID: Small, with a 37 foot wingspan.

Summary: A twin-engine jet used in the training of undergraduate pilots.

Aircraft Not Drawn to Scale

SUCCESS STORIES



■ Joshua Tree National Park and Military Training Route VR-1257

In 2000, the U.S. Air Force, the U.S. Navy, and the National Park Service cooperated to modify a VFR military training route, VR-1257. This cooperative effort resulted in positive training benefits for the military, enhanced enjoyment of the park by visitors, and reinforcement of respective agency missions.

VR-1257 is a one-way 590 nm low-altitude military training route that originates off the coast of California, goes inland and eventually over Joshua Tree National Park, and ends at the training ranges in El Centro south of the park. A segment of the route originally transited the heavily visited northwestern and central parts of the park, passing over a major scenic roadway, seven of the park's nine campgrounds, and six of the eight picnic areas. It also passed over the highest concentration of desert tortoise habitat, bighorn sheep watering and lambing areas, raptor nesting sites, and major cultural resources.

The route was designed to provide pilots with the opportunity to practice terrain avoidance over both mountainous and non-mountainous terrain at optimum training levels of 200' AGL. Such training is essential to military pilots learning low-level radar avoidance maneuvers. However, in response to noise complaints from park visitors, the military had voluntarily raised the minimum altitude to 1500' AGL. This resulted in less than optimal training opportunities for military pilots and did little to eliminate the noise complaints.

The Air Force, a user of the route, and the Navy, suggested that the three agencies form a team and develop an EA that evaluated the environmental consequences of relocating the portion of the route overlying Joshua Tree National Park. An alternate route was proposed that covered a section of the park with little visitor use and no campgrounds or picnic areas. The new route would overlie few, if any, desert tortoises or bighorn sheep watering and lambing areas, no raptor nesting sites, and only two historic properties. An added benefit of relocating the MTR was the ability to return the route's floor to the optimum training level of 200' AGL.

When the EA for the proposed route was released for public review and comment, the neighboring

rural communities raised concerns about the noise potential. Working with Congresswoman Mary Bono's office, the park and the military conducted a demonstration flight along the new proposed MTR so that the park neighbors could hear for themselves what the noise impacts would be. The demonstration flight, which registered noise levels that were below normal background noise, alleviated the concerns that had been raised by park neighbors.

The final EA was completed and the agencies issued a "finding of no significant impact" (FONSI). The FAA published the revised route in its December 2000 aeronautical maps, and pilots have begun to use the new route.

All three involved agencies gained something significant from this cooperative initiative. The modified route improved both the training experience for the military pilots and the ability of park visitors to hear the sounds of nature and to experience such park values as solitude.

Several circumstances came together to make this cooperative effort a success:

- The park manager clearly defined the noise-sensitive resource and visitor experience areas of the park.
- The park manager and the airspace manager maintained an open channel of communication.
- The military and the park jointly developed the required NEPA compliance documents.
- The partnering agencies presented options that would meet the flight training requirements of the military and the resource protection and visitor experience conditions sought by the park, ultimately agreeing on a route that would benefit both the military and the park, thus creating a "win-win scenario."
- The military and the park worked closely with neighboring communities and their political representatives to resolve noise concerns.

■ Big Bend National Park and Laughlin Air Force Base

The mountains of Big Bend National Park contrast with desert within the great bend of the Rio Grande, as the river rushes through deep-cut canyons and the open desert for 118 miles. A MTR controlled by Laughlin AFB in Del Rio, Texas, went over heavily visited areas of the park and generated a number of noise complaints from park visitors. The park manager and a key member of his staff attended an Air Force Southwest Region Airspace and Range Council meeting, where they presented their concerns and made contact with the appropriate officials from Laughlin AFB and from the Headquarters for Ranges and Airspace (HQ USAF/XOO-RA).

The park manager initially asked if the route could be moved completely outside the park. The Air Force representatives explained why they could not do that and still accomplish their military

readiness mission. With help from XOO-RA, the park and Laughlin AFB searched for a compromise. An agreement was reached to use an alternative MTR during the one-month peak visitation period for the park. This adjustment satisfied both agencies by virtually eliminating flights over the most heavily visited portions of the park during the busiest time of the year while allowing the Air Force to continue conducting necessary pilot training.

This was one of the first success stories worked out between the two agencies. It illustrated the value of having parks identify military overflight concerns at the appropriate Air Force regional meeting and of using that forum as a mechanism for making key contacts, particularly at the local level.



■ Pipe Spring National Monument and IR126

Pipe Spring National Monument, located in northwest Arizona just south of the Utah border in a remote and quiet natural setting, lies under an IFR military training route, IR-126. The management of Pipe Spring has taken an active role in the airspace decision-making process over the years and has built a constructive working relationship with the Air Force. The following examples show how local-level problem solving is often the quickest and most efficient way to handle issues and concerns.

- The park manager and members of his staff observed that the noise from training flights (primarily B-1 bombers) near the park interfered with interpretive programs of this site, which was established to preserve and convey the feel of the 1870s pioneer experience. There was also concern that vibrations from low-level flights could be detrimental to the park's historic structures. The park manager voiced his concerns, and explained his park's location, mission, resources, and desired visitor experience at the Air Force Western Pacific Region Airspace and Range Council meeting in Palm Springs in 1997. At the meeting he met USAF officials from Barksdale AFB, LA, the scheduling agency for IR-126. After analysis, the Air Force determined that it could accomplish its training missions using a different part of the route and offered to schedule flights at least one-half mile from the park or at an altitude of at least 1,000' AGL. The park manager at Pipe Spring attended subsequent Air Force regional meetings to express his appreciation for the Air Force's responsiveness and cooperation.
- In early 2001, Pipe Spring staff witnessed two Air Force fighter jets flying fast and low over the park. The park manager called the Air Force, and the airspace manager at Barksdale AFB quickly identified and contacted the two pilots

involved. The next day, one of the pilots called the park manager. The pilot was unaware that he had been flying over this small unit (40 acres). After learning about the park's location and mission, including its historical reenactments, he went to the extraordinary length of calling the airspace manager at Barksdale AFB on the park's behalf. The airspace manager called the park manager, and the two of them agreed on an appropriate additional buffer zone (also referred to as an avoidance zone).

- On April 9, 2002, park staff reported seeing a B-1 bomber that appeared to be within the agreed upon avoidance zone of 1 mile laterally and 1500' AGL. The park manager again called on the contacts he had made at the Air Force regional meetings, in this case the airspace manager for the Air Combat Command (ACC). That official was able to determine that the B-1 in question was flown by an ANG unit that was not familiar with the park's location. He notified the ANG of the park's whereabouts to avoid future problems. The park manager indicated that the action taken by the Air Force in response to his expression of concern was both prompt and effective.

The Pipe Spring examples illustrate the value of the two agencies getting to know each other's locations, missions, objectives, resources, and constraints at the local level. In each case, the contacts that the park manager made at Air Force Regional Airspace and Range Council meetings provided assistance, and the Air Force was able to accommodate the park without causing a negative impact on military readiness training.



■ Sequoia-Kings Canyon and Death Valley National Parks and the R-2508 Complex (Edwards Air Force Base and Lemoore Naval Air Station)

The Air Force and National Park Service have a history of working together in California, where two of the nation's biggest parks interact with some of the most complex airspace scheduled by the military.

Sequoia-Kings Canyon National Parks are located in California's High Sierra and are home to Mount Whitney, the highest mountain in the U.S. outside of Alaska. Death Valley National Park, the largest NPS unit in the contiguous United States, is located in the Mojave Desert of California and includes the lowest point in the Western Hemisphere. Both parks contain large amounts of wilderness.

The eastern half of Sequoia-Kings Canyon and the western half of Death Valley lie beneath the R-2508 Complex, the largest and most topographically diverse military airspace in the Lower 48 states. The R-2508 Complex is vital to systems development and aircrew training.

The NPS had been working with Edwards AFB and Lemoore Naval Air Station (NAS) for 20 years in an effort to curb individual deviations from the existing 3,000' AGL altitude restriction over the parks, with only sporadic success.

Thanks largely to the strong support of the commanders of Edwards AFB and Lemoore NAS, the DOD's Joint Policy and Planning Board (JPPB) placed a voluntary floor of 18,000' MSL on military aircraft using the R-2508 Complex. The voluntary floor is in effect unless lower altitude operations are approved on a case-by-case basis, and only after careful review of the requirements.

The key to resolving the military overflight issues among the parks and the Air Force and Navy was the ongoing effort on the part of the three agencies to achieve a better understanding of each other's missions, resources, priorities, etc. That included regular participation by the National Park Service at the annual Air Force Western Pacific Region Airspace and Range Council meetings and ongoing NPS attendance at DOD's JPPB meetings; the latter are facilitated by the flag officers at Edwards AFB, China Lake NAS, and Fort Irwin and National Training Center.

Another major contributor to the enhanced working relationship among the three agencies has been annual backcountry trips into the park. Park management typically invites a number of key USAF, USN and other DOD officials to participate in those backcountry trips, to give them a better idea of what the parks are about and of the resources and visitor experiences that they are trying to protect. Since the backcountry trips began, the number of deviations from DOD altitude restrictions over the park has plummeted to near zero. Meanwhile, the Department of Defense has taken selected NPS officials on orientation flights, and Edwards AFB has had NPS officials out to tour the base. Over the past few years, the personnel at Edwards AFB have consistently addressed and resolved airspace issues raised by the National Park Service. The strong working relationship that exists between Sequoia-Kings Canyon NPs and Edwards AFB features just the kind of communication and cooperation the two agencies are trying to encourage at the local level.



Air Force Regional Meetings Hosted by the National Park Service

The special nature of the relationship that has developed between the Air Force and the National Park Service is illustrated by the fact that the National Park Service is the only non-DOD agency to have hosted an Air Force Regional Airspace and Range Council meeting, having done so in 1997 in Palm Springs and in 1998 in Santa Fe. In addition, Gulf Islands National Seashore has offered to host the Air Force's Southern Region meeting at Pensacola, FL, in 2003.

■ 1st Air Force, Alaska, the National Park Service, and Other Land Management Agencies

In the mid-1990s, the Department of Defense sought to relocate Operation Cope Thunder, a vital military training exercise that had been conducted in the Pacific, near the Philippines. Cope Thunder required such a large amount of airspace that the Air Force quickly began focusing on Alaska. The Air Force sought to establish some new MOAs, and to modify some existing ones, by working with all of the major stakeholders.

The Air Force completed an EIS for the proposed changes and additions. The National Park Service and other DOI agencies provided numerous comments, resulting in changes from the draft EIS to the final version. While some national park units, including Denali and Lake Clark, benefited from the new MOAs while other parks, such as Gates of the Arctic, had new MOAs established over them, all of the parties at interest worked together to develop a mechanism for improving communication and coordination on issues of mutual interest.

Key to the establishment of the MOAs and to the communication process was that the Air Force established three interagency committees to talk about the effects of overflights in the MOAs on

land management agency resources, and about mitigation options. The three committees addressed research, mitigation, resource management, and public information. The agencies established a Resource Protection Council to serve as the decision-making body for the committees. The Air Force agreed to provide funding for research and for mitigation initiatives for a specified period of time.

The committees met regularly and developed a relationship featuring the kind of free exchange of information that had not happened prior to the establishment of the committees. The format of the meetings encouraged problem identification and resolution in an informal setting. For example, a resource management specialist from the National Park Service would identify Dall sheep lambing areas and ask if the Air Force could avoid those areas during lambing seasons. The Air Force would often agree to do so.

The bottom line is that the process used to identify the new MOAs in Alaska resulted in more consistent communication and cooperation between the Air Force and the land management agencies than had existed prior to the EIS.

■ Crater Lake National Park, the Air Force, and the Army

The relationships established through NPS participation in the Regional Airspace and Range Council meetings have led to more than just conflict resolution. As the agencies that share the same space get to know one another, opportunities to work together are uncovered.

One prominent example took place at Crater Lake National Park in southwest Oregon, site of the deepest natural lake in the U.S, in the summer of 2000. Crater Lake had contracted, at considerable expense, to have the research vehicle *Surf Surveyor* map the lake floor. At the last minute, the company scheduled to airlift the *Surf Surveyor* to the lake backed out because all of its aircraft were in use fighting wildland fires. Time had all but run out when the NPS Pacific West Regional Director called the USAF's liaison to the Department of the Interior for help. The latter official quickly located

an installation – Fort Lewis, Washington – with the equipment and personnel necessary to do the job. Fort Lewis sent an Army CH-47D Chinook helicopter to airlift the research vehicle to Crater Lake. The mapping project was a complete success and the research vehicle was returned as scheduled.

The National Park Service was clearly the principal beneficiary in this example, but the Army also received a tangible benefit in the form of a real mission, in lieu of a training exercise. This example is not about military overflights, but it is highly unlikely that the success story at Crater Lake NP would have happened but for the fact that the NPS regional director and the AF liaison to the Department of Interior knew each other from working together on military overflight issues.



The F-15 Eagle is an all-weather, extremely maneuverable, tactical fighter designed to permit the Air Force to gain and maintain air superiority in aerial combat. *(U.S. Air Force Photo)*